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Test Booklet Code & No.
प्रश्नपत्रिका कोड व क्र.

C

Paper-II
LIFE SCIENCE

Signature and Name of Invigilator

1. (Signature) .....

(Name) .....

2. (Signature) .....

(Name) .....

Seat No. | | | | | | |

(In figures as in Admit Card)

Seat No. .....

(In words)

OMR Sheet No. | | | | | | |

(To be filled by the Candidate)

MAY - 34216

Time Allowed : 1¼ Hours] **[Maximum Marks : 100**

Number of Pages in this Booklet : **12** Number of Questions in this Booklet : **50**

Instructions for the Candidates

1. Write your Seat No. and OMR Sheet No. in the space provided on the top of this page.
2. This paper consists of **50** objective type questions. Each question will carry *two* marks. *All* questions of Paper-II will be compulsory, covering entire syllabus (including all electives, without options).
3. At the commencement of examination, the question booklet will be given to the student. In the first 5 minutes, you are requested to open the booklet and compulsorily examine it as follows :
   (*i*) To have access to the Question Booklet, tear off the paper seal on the edge of this cover page. Do not accept a booklet without sticker-seal or open booklet.
   (*ii*) **Tally the number of pages and number of questions in the booklet with the information printed on the cover page. Faulty booklets due to missing pages/questions or questions repeated or not in serial order or any other discrepancy should not be accepted and correct booklet should be obtained from the invigilator within the period of 5 minutes. Afterwards, neither the Question Booklet will be replaced nor any extra time will be given. The same may please be noted.**
   (*iii*) After this verification is over, the OMR Sheet Number should be entered on this Test Booklet.
4. Each question has four alternative responses marked (A), (B), (C) and (D). You have to darken the circle as indicated below on the correct response against each item.
   Example : where (C) is the correct response.
   (A) (B) ● (D)
5. Your responses to the items are to be indicated in the **OMR Sheet given inside the Booklet only.** If you mark at any place other than in the circle in the OMR Sheet, it will not be evaluated.
6. Read instructions given inside carefully.
7. Rough Work is to be done at the end of this booklet.
8. If you write your Name, Seat Number, Phone Number or put any mark on any part of the OMR Sheet, except for the space allotted for the relevant entries, which may disclose your identity, or use abusive language or employ any other unfair means, you will render yourself liable to disqualification.
9. You have to return original OMR Sheet to the invigilator at the end of the examination compulsorily and must not carry it with you outside the Examination Hall. You are, however, allowed to carry the Test Booklet and duplicate copy of OMR Sheet on conclusion of examination.
10. **Use only Blue/Black Ball point pen.**
11. **Use of any calculator or log table, etc., is prohibited.**
12. **There is no negative marking for incorrect answers.**

विद्यार्थ्यांसाठी महत्त्वाच्या सूचना

1. परिक्षार्थींनी आपला आसन क्रमांक या पृष्ठावरील वरच्या कोपऱ्यात लिहावा. तसेच आपणांस दिलेल्या उत्तरपत्रिकेचा क्रमांक त्याखाली लिहावा.
2. सदर प्रश्नपत्रिकेत 50 बहुपर्यायी प्रश्न आहेत. प्रत्येक प्रश्नास **दोन** गुण आहेत. या प्रश्नपत्रिकेतील **सर्व** प्रश्न सोडविणे अनिवार्य आहे. सदरचे प्रश्न हे या विषयाच्या संपूर्ण अभ्यासक्रमावर आधारित आहेत.
3. परीक्षा सुरू झाल्यावर विद्यार्थ्याला प्रश्नपत्रिका दिली जाईल. सुरुवातीच्या 5 मिनीटांमध्ये आपण सदर प्रश्नपत्रिका उघडून खालील बाबी अवश्य तपासून पहाव्यात.
   (*i*) प्रश्नपत्रिका उघडण्यासाठी प्रश्नपत्रिकेवर लावलेले सील उघडावे. सील नसलेली किंवा सील उघडलेली प्रश्नपत्रिका स्विकारू नये.
   (*ii*) **पहिल्या पृष्ठावर नमूद केल्याप्रमाणे प्रश्नपत्रिकेची एकूण पृष्ठे तसेच प्रश्नपत्रिकेतील एकूण प्रश्नांची संख्या पडताळून पहावी. पृष्ठे कमी असलेली/कमी प्रश्न असलेली/प्रश्नांचा चूकीचा क्रम असलेली किंवा इतर त्रुटी असलेली सदोष प्रश्नपत्रिका सुरुवातीच्या 5 मिनिटातच पर्यवेक्षकाला परत देऊन दुसरी प्रश्नपत्रिका मागवून घ्यावी. त्यानंतर प्रश्नपत्रिका बदलून मिळणार नाही तसेच वेळही वाढवून मिळणार नाही याची कृपया विद्यार्थ्यांनी नोंद घ्यावी.**
   (*iii*) वरीलप्रमाणे सर्व पडताळून पहिल्यानंतरच प्रश्नपत्रिकेवर ओ.एम.आर. उत्तरपत्रिकेचा नंबर लिहावा.
4. प्रत्येक प्रश्नासाठी (A), (B), (C) आणि (D) अशी चार विकल्प उत्तरे दिली आहेत. त्यातील योग्य उत्तराचा रकाना खाली दर्शविल्याप्रमाणे ठळकपणे काळा/निळा करावा.
   उदा. : जर (C) हे योग्य उत्तर असेल तर.
   (A) (B) ● (D)
5. या प्रश्नपत्रिकेतील प्रश्नांची उत्तरे **ओ.एम.आर. उत्तरपत्रिकेतच दर्शवावीत.** इतर ठिकाणी लिहीलेली उत्तरे तपासली जाणार नाहीत.
6. आत दिलेल्या सूचना काळजीपूर्वक वाचाव्यात.
7. प्रश्नपत्रिकेच्या शेवटी जोडलेल्या कोऱ्या पानावरच कच्चे काम करावे.
8. जर आपण ओ.एम.आर. वर नमूद केलेल्या ठिकाणा व्यतिरीक्त इतर कोठेही नाव, आसन क्रमांक, फोन नंबर किंवा ओळख पटेल अशी कोणतीही खूण केलेली आढळून आल्यास अथवा असभ्य भाषेचा वापर किंवा इतर गैरमार्गांचा अवलंब केल्यास विद्यार्थ्याला परीक्षेस अपात्र ठरविण्यात येईल.
9. परीक्षा संपल्यानंतर विद्यार्थ्याने मूळ ओ.एम.आर. उत्तरपत्रिका पर्यवेक्षकांकडे परत करणे आवश्यक आहे. तथापी, प्रश्नपत्रिका व ओ.एम.आर. उत्तरपत्रिकेची द्वितीय प्रत आपल्याबरोबर नेण्यास विद्यार्थ्यांना परवानगी आहे.
10. **फक्त निळ्या किंवा काळ्या बॉल पेनचाच वापर करावा.**
11. **कॅलक्युलेटर किंवा लॉग टेबल वापरण्यास परवानगी नाही.**
12. **चुकीच्या उत्तरासाठी गुण कपात केली जाणार नाही.**

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Life Science
Paper II

Time Allowed : 75 Minutes] **[Maximum Marks : 100**

Note : This paper contains **Fifty (50)** multiple choice questions. Each question carries **Two (2)** marks. Attempt *All* questions.

1. Formation of new species without geographic isolation, in presence of barrier to gene flow is known as _____ speciation.
   (A) Isopatric
   (B) Allopatric
   (C) Sympatric
   (D) Allelopatric

2. Which of the following is used to assess whether or not a population is evolving ?
   (A) Extent of reproductive isolation among individuals in an allopatric population
   (B) Genetic drift
   (C) Proportion between aquired variations
   (D) Hardy-Weinberg equation

3. Coacervates were formed by :
   (A) DNA
   (B) gamma radiations
   (C) polymerization only
   (D) polymerization and aggregations

4. Which one of the following population of two species, one is inhibited and the other remain unaffected ?
   (A) Parasitism
   (B) Predation
   (C) Ammensalism
   (D) Commensalism

5. When a population remains on the ascending part of the logistic growth curve, it is known as :
   (A) K-strategists
   (B) *r*-strategists
   (C) Stationary phase
   (D) Lag phase

6. First life on earth was :
   (A) Cyanobacteria
   (B) Saprophytes
   (C) Chemo-heterotrophs
   (D) Photo-autotrophs

7. Which of the following is an edaphic factor ?
   (A) Light
   (B) Rainfall
   (C) Soil
   (D) Wind

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8. Many of the tropical lakes rarely undergo vertical circulation of water. Such lakes are termed _____.

(A) amictic

(B) holomictic

(C) monomictic

(D) oligomictic

9. Which of the following is *not* an endangered species ?

(A) The rhesus macaque, *Macaca mulatta*

(B) Kashmir gray langur, *Semnopithecus ajax*

(C) Lion-tailed macaque, *Macaca silenus*

(D) Hoolock gibbon, *Hoolock hoolock*

10. _____ is a very sensitive bioindicator of sulphur dioxide pollution in the air.

(A) Wild rice

(B) Water cabbage

(C) Lichen

(D) False Ashoka

11. Which of the following is *not* a component of sustainable development policy ?

(A) Economic development

(B) Environmental protection

(C) Community development

(D) Over-utilization of natural resources

12. Which process introduces new alleles in a population ?

(A) Natural selection

(B) Mutation

(C) Genetic drift

(D) Genetic recombination

13. The active anti-cancer agents vinblastine and vincristine are obtained from :

(A) *Carthamus tinctorius* Linn.

(B) *Cassytha filiformis* Linn.

(C) *Catheranthus roseus* (L.) G. Dom

(D) *Castanea sativa* Mill

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14. *Drosophila pseudoobscura* and Drosophila persimilis are called as :
(A) identical species
(B) sibling species
(C) biological species
(D) polytypic species

15. Which of the following is a natural system of classification of Angiosperms ?
(A) Bessey's system
(B) Bentham and Hooker's system
(C) Engler and Prantl's system
(D) Hutchinson's system

16. Which of the following has the highest percentage of endangered animal species ?
(A) Fishes
(B) Amphibia
(C) Reptiles
(D) Mammals

17. Numerical taxonomy is based on evidence :
(A) Cladistic
(B) Phenetic
(C) Phylogenetic
(D) Systematic

18. Molecular systematics makes use of _____ for identification of microbes.
(A) 16s *r*DNA sequences
(B) Alu repeats
(C) Insertion sequences
(D) Satellites

19. Which of the following is *not* an *in situ* strategy of conservation ?
(A) Protected area
(B) Terrestrial biosphere reserve
(C) Marine biosphere
(D) Field gene bank

20. Which popular data matrix is available for numerical taxonomy today ?
(A) DELTA
(B) GAMMA
(C) THETA
(D) EPSILON

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21. Sex in Drosophila is determined by :

(A) X/A ratio

(B) 22/2W chromosomes

(C) XX/XY chromosomes

(D) Environmental regulation

22. The 50 S ribosomal subunit is present in :

(A) Prokaryotic cell only

(B) Both prokaryotic cell and eukaryotic cell

(C) Eubacteria only

(D) Eukaryotic cell only

23. Which of the following is *not* an attribute of adaptive immune response ?

(A) Specificity

(B) Diversity

(C) Sensitivity

(D) Memory

24. Caspases are the effectors of apoptosis belonging to the family of :

(A) Lipases

(B) Proteases

(C) Kinases

(D) Phosphotases

25. Which of the following proteins, integrins interact with, during cell-cell interactions with respect to mammalian cells ?

(A) Fibronectins

(B) Tubulins

(C) Myosins

(D) Myelins

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26. The terminal caspase of intrinsic pathway is :

(A) Caspase 9

(B) APAF-1

(C) Caspase 3

(D) Caspase 8

27. Dorsal lip of blastopore of frog is equivalent to _____ of chick embryo.

(A) Koller's sickle

(B) Hensen's node

(C) Area opaca

(D) Area pellucida

28. A competitive inhibitor of an enzyme :

(A) Decreases the K_m

(B) Decreases the V_{max}

(C) Increases both V_{max} and K_m

(D) Increases the K_m

29. Which of the following compounds is *not* an inhibitor of electron transport chain ?

(A) Rotenone

(B) Antimycin A

(C) Cyanide

(D) Dinitrophenol

30. A solution of acidic buffer with a pH of 4.0 is _____ times more acidic than same buffer with a pH of 6.0.

(A) 2

(B) 100

(C) 1000

(D) 10

31. Which of the following coenzymes is involved in transamination reaction of amino acid metabolism ?

(A) Pyridoxal phosphate

(B) Thiamine pyrophosphate

(C) NADH

(D) Biotin

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32. "Synonymous codons" for amino acids in the "Genetic code" depict that :

(A) Higher frequency of the codon results into higher percentage of the amino acid in the proteins

(B) Mutation at the third position of the codon may not result into defect in the protein

(C) Mutation at the first position of the codon may not result into defect into the protein

(D) tRNA anticodon does not bind to the third position of the codon

33. A molecule of arachidonic acid contains _____ double bonds.

(A) 2

(B) 3

(C) 4

(D) 8

34. In CO_2 fixation pathway in crassulacean plants, which of the following is the acceptor of CO_2 ?

(A) Ribulose 1, 5 bisphosphate

(B) Phosphoenol pyruvate

(C) Ribulose 5 phosphate

(D) Oxaloacetate

35. Aldolase is an enzyme that catalyzes conversion of fructose 1,6 bisphosphate to glyceraldehyde 3 phosphate and dihydroxy acetone phosphate. It belongs to which of the following enzyme class ?

(A) Oxidoreductases

(B) Ligases

(C) Hydrolase

(D) Lyases

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36. A top athlete has a resting heart rate of 50 beats and cardiac output of 5 liters. What is his stroke volume ?

(A) 50 mL

(B) 100 mL

(C) 200 mL

(D) 70 mL

37. The widest spectrum of physiological effects is caused by :

(A) Somatotropin

(B) Somatostatin

(C) Insulin

(D) Thyroxine

38. Filtration of blood through the glomerulus of a kidney under normal conditions is :

(A) a chemical process

(B) an energy dependent process

(C) a physical process

(D) a carrier-mediated process

39. The terms synapse and synapsis are respectively used in relation to :

(A) nervous system and chromosomal pairing

(B) cell fusion and nuclear fusion

(C) transcription and cell motility

(D) metabolism and protein synthesis

40. Which of the following molecules have cytoplasmic receptors ?

(A) Thyroxine and Oestrogen

(B) Growth hormone and Progesterone

(C) Oestrogen and Progesterone

(D) Growth hormone and Oestrogen

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41. _____ was the first growth hormone to be studied in plants.

(A) Gibberellin

(B) Cytokinin

(C) Auxin

(D) Abscisic acid

42. In epistasis :

(A) One gene mask the effect of another gene

(B) Two genes are complementary to each other

(C) Extra-nuclear genes are involved

(D) Suppressor genes are activated

43. Centromeres of mammalian chromosomes are characterized by :

(A) facultative heterochromatin and mid-replicating

(B) constitutive heterochromatin and late-replicating

(C) facultative heterochromatin and early-replicating

(D) DNA sequences with high recombination frequency

44. The product of transcription is a —

(A) RNA

(B) functional *m*RNA

(C) pre-*m*RNA

(D) Sn RNAs

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45. The F_2 phenotypic ratio is 1 : 1 : 1 : 1 : 1 : 1 : 1 : 1 . What type of cross was made with F_1 to obtain this ratio ?

(A) Back cross

(B) Test cross

(C) Two-way cross

(D) Three-way cross

46. Which enzyme repair cyclobutane pyrimidine dimers ?

(A) AP endonucleases

(B) DNA photolyases

(C) Dam methylases

(D) DNA polymerase II

47. Human monochromosomal hybrids for genome mapping are prepared by use of :

(A) Microcell mediated gene transfer

(B) Lipofection

(C) Retroviral vectors

(D) Electroporation

48. Which is the most common transposable element in human ?

(A) AC elements

(B) DS elements

(C) Alu

(D) Ty elements

49. What is the basic structural unit of chromatin ?

(A) DNA

(B) Chromatin fibre

(C) Histones

(D) Nucleosome

50. The centre of origin of potato is :

(A) Brazil

(B) Central Asia

(C) Peru

(D) North-east Asia

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ROUGH WORK

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